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(54) **Achromatic tunner for birefringent optical filter.**

(57) An achromatic birefringent retardation plate has a quarter wave of linear optical birefringence over a wavelength range centered about a nominal wavelength. The plate includes a combination of two birefringent optical disks (31, 32) in adjacent positions along a light beam axis (36). Each disk (31, 32) has a linear optical birefringence with a fast axis (37, 38, respectively). The two disks (31, 32) have thicknesses such that, at the nominal wavelength, they have their linear optical birefringence at n and m quarter waves, respectively of the nominal wavelength, where n is an odd integer greater than one and where m is an even integer greater than n .

The fast axes (37, 38) of the linear birefringences of the disks (31, 32) have rotational orientations about the light beam axis (36) whereby the fast axis orientation of the other disk differs from that of the one disk by ninety degrees, plus or minus one-half of the angle whose cosine is equal to the ratio of n to m (angle 39).

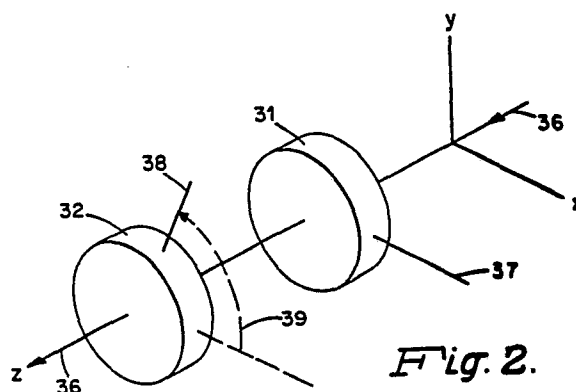


Fig. 2.

EP 0 303 111 A3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	JOURNAL OF THE OPTICAL SOCIETY OF AMERICA vol. 49, no. 4, April 1959, pages 405-409; C. J. KOESTER: "Achromatic Combinations of Half-Wave Plates" * in total *	1	G 02 B 5/20 G 02 B 27/28 G 02 B 5/30
A,D	LE JOURNAL DE PHYSIQUE ET LE RADIUM vol. VIII, no. X, février 1949, pages 53-55; M. G. DESTRIAU et al.: "Réalisation d'un quart d'onde quasi achromatique par juxtaposition de deux lames cristallines de meme nature" * page 53, paragraph "Introduction"; pages 54-55, paragraph "Réalisation pratique du part d'onde achromatique" *	1	
A	DE-A-1 772 901 (FA. CARL ZEISS) * page 1, paragraph 1; page 2, paragraph 2; claim 1; figure *	1	
A	GB-A-2 105 864 (SPECTRON DEVELOPMENTS LTD.) * abstract; claim 1 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.4) G 02 B 5/00 G 02 B 6/00 G 02 B 27/00
A,D	PROCEEDINGS OF THE INDIAN ACADEMY OF SCIENCE A 41, 5 March 1955, pages 137-144; S. PANCHARATNAM: "Achromatic combinations of birefringent Plates" * page 144 "Summary" *	1	
A,D	US-A-4 678 287 (C. F. BUHRER) * abstract; claim 8 *	1	
		-/-	
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 05-09-1989	Examiner HYLLA W.A.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A,D	OPTICAL ENGINEERING vol. 20, no. 6, November/December 1981, pages 815-823; A. M. TITLE et al.: "Tunable birefringent filters" * pages 820,821, item 4 "Tuning birefringent filters" * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
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